



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,731	05/10/2006	Constantinos D. Diakoumakos	830018	4463
7590 06/15/2009				
Huntsman Corporation Legal Department 10003 Woodloch Forest Drive The Woodlands, TX 77380			EXAMINER FINK, BRIEANN R	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 06/15/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,731

Applicant(s)

DIAKOU MAKOS ET AL.

Examiner

Briann R. Fink

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-25 and 32-43 is/are pending in the application.
4a) Of the above claim(s) 32-43 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 23-25 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This office action follows a reply filed on April 7, 2009. Claim 23 has been amended. Claims 23-25 and 32-43 are currently pending and under examination.
2. The texts of those sections of Title 35 U.S. Code are not included in this section and can be found in a prior Office action

Election/Restrictions

3. Applicant's election with traverse of the complex of an organoboron compound and an organosilicon compound in the reply filed on April 7, 2009 is acknowledged. The traversal is on the ground(s) that the inventions do not impose an undue burden of examination. This is not found persuasive because Group I and Group II still lack the same technical feature, as was stated in the previous action: the silsesquioxane.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

4. Claims 23-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sonnenschein et al.* (US 6,777,512) in view of *Lichtenhan et al.* (US 2003/0055193).

Sonnenschein et al. teaches an organoborane amine complex that dissociates to initiate polymerization (col. 3, ll. 42-43). The organoborane is a trialkyl borane or an alkyl cycloalkyl borane (col. 3, ll. 65-66). *Sonnenschein et al.* teaches that the amines used to complex the organoborane can be any amine (or mixture of amines) which complex the organoborane and can be further decomplexed (col. 4, ll. 11-14). A preferred amine is one comprising a

compound having a primary amine and hydrogen bond accepting groups, which are separated by at least two to three carbon atoms (col. 5, ll. 8-14). The amines can be amino siloxanes (col. 9, ll. 10-11). The amine can also be an amine terminated polysiloxane (col. 10, ll. 18-19). The amines are preferably primary or secondary amines (col. 4, ll. 44-45).

Sonnenschein et al. does not teach the polysiloxane as being specifically a silsesquioxane.

Lichtenhan et al., however, teaches processes for functionalizing polyhedral oligomeric silsesquioxanes (p. 1, [0002]). The silsesquioxanes can be functionalized with amines, aliphatic and aromatic (p. 8, [0055]). Process III, shown in Scheme 4 (p. 8) is taught to produce functionalized polyhedral oligomeric silsesquioxanes that are useful as crosslinkers in polymerizations (p. 7, [0049]). *Lichtenhan et al.* further teaches that incorporation of polyhedral oligomeric silsesquioxanes into polymer materials results in a material with improved thermal, mechanical, and physical properties (p. 1 [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the organoborane amine complex of *Sonnenschein et al.* by using a silsesquioxane in the amine terminated polysiloxane as suggested by *Lichtenhan et al.* because it would give polymer compositions which are more stable at higher temperatures, as well as improved mechanical strength.

As to claim 24, *Sonnenschein et al.* teaches that the alkyl groups of the organoborane have one to ten carbon atoms.

As to claim 25, *Sonnenschein et al.* teaches the preferred organoboranes of the following: tri-ethyl borane, tri-isopropyl borane, and tri-n-butyl borane.

5. The rejections, as set forth in the previous office action, are deemed proper and are therefore maintained.

Response to Arguments

6. Applicant's arguments filed April 7, 2009 have been fully considered but they are not persuasive.

a. Applicants argue that the above rejection does not present a case of *prima facie* obviousness because "one of ordinary skill in the art would be subjected to randomly selecting from a potentially infinite number of combinations of amines and silsesquioxanes in order to arrive at the particular combination...".

The above rejection is able to show that one of ordinary skill in the art could have combined the claimed elements by known methods and that the elements in combination would be reasonably expected to perform the same function as any other complex of an organoboron and organosilicon. The burden then shifts to the applicants to show that the subject matter would have been nonobvious, which may include evidence of unexpected results. "A mere statement or argument that the Office has not established a *prima facie* case of

obviousness...will not be considered substantively adequate to rebut the rejection..." See MPEP 2141 IV and V.

The examples cannot be relied on to show unexpected results because there is no showing that a complex with a silsesquioxane is better than other siloxanes. If fact the examples all use a combination of a silsesquioxane complex with that of a siloxane complex.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Briann R. Fink whose telephone number is (571)270-7344. The examiner can normally be reached on Monday through Friday, 7:00 AM to 4:30 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. R. F./
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796